WHAT IS CLAIMED:

1. A method of treating a metal to improve the metal's corrosion resistance, said method comprising:

applying, to the surface of the metal, a coating which comprises magnesium powder and a binder.

2. A method according to claim 1, wherein the coating is substantially free of chromium.

3. A method according to claim 1, wherein the coating does not comprise added chromium.

4. A method according to claim 1, wherein the metal is aluminum or an aluminum alloy.

5. A method according to claim 4, wherein the metal is an aluminum alloy.

6. A method according to claim 5, wherein the aluminum alloy is a copper-containing aluminum alloy.

7. A method according to claim 6, wherein the copper-containing aluminum alloy is Al 2024 T-3.

8. A method according to claim 6, wherein the copper-containing aluminum alloy is Al 7075 T-6.

9. A method according to claim 1, wherein the magnesium powder comprises a mixture of a first magnesium particle powder and a second magnesium particle powder, wherein the first magnesium particle powder and a second magnesium particle powder have substantially different

mean particle size distributions, wherein the mixture's bulk density is greater than the first magnesium particle powder's bulk density, and wherein the mixture's bulk density is greater than the second magnesium particle powder's bulk density.

10. A method according to claim 9, wherein the first magnesium particle powder has a mean particle size distribution of from about 25μm to about 35μm and wherein the second magnesium particle powder has a mean particle size distribution of from about 65μm to about 75μm.

11. A method according to claim 10, wherein the first magnesium particle powder has a mean particle size distribution of about 30μm and wherein the second magnesium particle powder has a mean particle size distribution of from about 70μm.

12. A method according to claim 10, wherein the mixture contains first magnesium particle powder and second magnesium particle powder in a volume ratio of from about 40:60 to about 60:40.

13. A method according to claim 10, wherein the mixture contains first magnesium particle powder and second magnesium particle powder in a volume ratio of from about 45:55 to about 55:45.

14. A method according to claim 10, wherein the mixture contains first magnesium particle powder and second magnesium particle powder in a volume ratio of from about 50:50 to about 55:45.

15. A method according to claim 14, wherein the first magnesium particle powder has a mean particle size distribution of about 30μm and wherein the second magnesium particle powder has a mean particle size distribution of from about 70μm.

16. A method according to claim 15, wherein the mixture contains first magnesium particle powder and second magnesium particle powder in a volume ratio of about 58:42.

17. A method according to claim 1, wherein the binder is a polymeric binder.

18. A method according to claim 17, wherein the polymeric binder comprises a polyisocyanate prepolymer and an epoxy prepolymer.

19. A method according to claim 18, wherein the polyisocyanate prepolymer is an aliphatic polyisocyanate prepolymer.

20. A method according to claim 18, wherein the polyisocyanate prepolymer is an aromatic polyisocyanate prepolymer.

21. A method according to claim 18, wherein the polymeric binder comprises a polyisocyanate prepolymer and an epoxy prepolymer and wherein said method further comprises contacting the polymeric binder with a crosslinker.

22. A method according to claim 21, wherein the crosslinker is a silanated tetrahydroquinoxalinol.

23. A method according to claim 21, wherein the crosslinker is a 7-phenyl-1-[4-(trialkylsilyl)-alkyl]-1,2,3,4-tetrahydroquinoxalin-6-ol.

24. A method according to claim 21, wherein the crosslinker is a 7-phenyl-1-[4-(trialkylsilyl)-butyl]-1,2,3,4-tetrahydroquinoxalin-6-ol.

25. A method according to claim 1, wherein, prior to said applying, said method further comprises:

contacting the metal surface with an amine-containing organo-silane.

26. A method according to claim 25, wherein the amine-containing organo-silane is (N-β-(aminoethyl)-γ-aminopropyltrimethoxysilane.

27. A method according to claim 25, wherein said contacting the metal surface with an amine-containing organo-silane produces an amine-containing organo-silane treated metal surface and wherein, prior to said applying, said method further comprises:

contacting the amine-containing organo-silane treated metal surface with a polyisocyanate prepolymer.

28. A method according to claim 17, wherein the polymeric binder is a silane modified epoxy isocyanate hybrid.

29. A method according to claim 17, wherein the polymeric binder is a polymeric material containing polyurea, polyurethane, epoxy-amine, and organo-silane linkages.

30. A method according to claim 1, wherein the magnesium powder is a powder of a magnesium alloy comprising (i) magnesium and (ii) calcium, manganese, lithium, carbon, zinc, potassium, aluminum, and/or a rare earth metal.

31. A method according to claim 1, wherein the magnesium powder is a powder of a magnesium alloy comprising (i) magnesium and (ii) manganese.

32. A method according to claim 1, wherein said method further comprises pretreating the surface of the metal with cerium ion.

33. A method according to claim 1, wherein the metal is in the form of a sheet in physical contact with a metal fastener wherein the sheet and fastener are made of different metals and wherein the coating is applied to the surface of both the sheet and the fastener.

34. A method according to claim 1, wherein the magnesium powder is magnesium flake.

35. A coating composition comprising:
magnesium powder; and
a silane modified epoxy isocyanate hybrid polymer or prepolymer.

36. A coating composition according to claim 35, wherein said magnesium powder is substantially uniformly dispersed in said silane modified epoxy isocyanate hybrid polymer or prepolymer.

37. A coating composition according to claim 35, wherein said magnesium powder comprises a mixture of a first magnesium particle powder and a second magnesium particle powder, wherein the first magnesium particle powder and a second magnesium particle powder have substantially different mean particle size distributions, wherein the mixture's bulk density is greater than that of the first magnesium particle powder's bulk density, and wherein the mixture's bulk density is greater than that of the second magnesium particle powder's bulk density.

38. A coating composition according to claim 37, wherein the first magnesium particle powder has a mean particle size distribution of from about 25μm to about 35μm and wherein the second magnesium particle powder has a mean particle size distribution of from about 65μm to about 75μm.

39. A coating composition according to claim 38, wherein the first magnesium particle powder has a mean particle size distribution of about 30μm and wherein the second magnesium particle powder has a mean particle size distribution of from about 70μm.

40. A coating composition according to claim 38, wherein the mixture contains first magnesium particle

powder and second magnesium particle powder in a volume ratio of from about 40:60 to about 60:40.

41. A coating composition according to claim 38, wherein the mixture contains first magnesium particle powder and second magnesium particle powder in a volume ratio of from about 45:55 to about 55:45.

42. A coating composition according to claim 38, wherein the mixture contains first magnesium particle powder and second magnesium particle powder in a volume ratio of from about 50:50 to about 55:45.

43. A coating composition according to claim 42, wherein the first magnesium particle powder has a mean particle size distribution of about 30μm and wherein the second magnesium particle powder has a mean particle size distribution of from about 70μm.

44. A coating composition according to claim 43, wherein the mixture contains first magnesium particle powder and second magnesium particle powder in a volume ratio of about 58:42.

45. A coating composition according to claim 35, wherein said silane modified epoxy isocyanate hybrid polymer or prepolymer comprises a polyisocyanate prepolymer, an epoxy prepolymer, and a silanated tetrahydroquinoxalinol crosslinker or a polymerization product thereof.

46. A coating composition according to claim 45, wherein the polyisocyanate prepolymer is an aliphatic polyisocyanate prepolymer.

47. A coating composition according to claim 45, wherein the polyisocyanate prepolymer is an aromatic polyisocyanate prepolymer.

48. A coating composition according to claim 45, wherein the silanated tetrahydroquinoxalinol crosslinker is a 7-phenyl-1-[4-(trialkylsilyl)-alkyl]-1,2,3,4-tetrahydroquinoxalin-6-ol.

49. A coating composition according to claim 45, wherein the silanated tetrahydroquinoxalinol crosslinker is a 7-phenyl-1-[4-(trialkylsilyl)-butyl]-1,2,3,4-tetrahydroquinoxalin-6-ol.